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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/658,931 | 09/09/2003 | Mamoru Suzuki | 7217 / 64724-Z | 3115 |

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| EXAMINER |
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TIBBITS, PIA FLORENCE

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| ART UNIT | PAPER NUMBER |
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2838

DATE MAILED: 05/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application N .

10/658,931

Applicant(s)

SUZUKI ET AL.

Examiner

Pia F Tibbits

Art Unit

2838

-- Th MAILING DATE of this communication appears on th cover sheet with th correspondenc address --
Peri d f r R ply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 September 2003.
2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3, 7 and 8 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1, 3, 7 and 8 is/are rejected.
7) ☒ Claim(s) 2 is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 16 January 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 09882403.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____

DETAILED ACTION

This Office action is in answer to the divisional application filed 9/9/2003. Claims 4-6 were canceled, and claims 1-3, 7 and 8 are pending.

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the measuring means, the correction value calculating means, the correcting means, the determining means must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

2. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

3. The specification is objected to as failing to provide consistent language throughout the disclosure: for example, the specification describes a correcting unit, a calculating unit, etc., while the claims recite correcting means, calculating means, etc.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 7 and 8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 7: the recitation "when the battery is in a standby mode the microcomputer sets itself in a sleep mode and starts the timer" is confusing since it contradicts the specification which states "when the battery pack 1 is in standby mode, a trace amount of discharge current (leakage current) flows, but the

accumulated current (standby current X standby time) **cannot be measured or detected because the microcomputer 17 is in sleep mode**". In other words, once placed in the sleep mode, the microcomputer cannot be used because a discharge to power the microcomputer would terminate the standby mode.

Claim 8: the recitation "determining whether the battery has not been in the charge/discharge mode" is confusing since the microcomputer controlling the battery has already been placed in a sleep mode in the preceding step. The specification also describes "the microcomputer 17 utilizes the power supplied from the battery 12 in order to determine the remaining battery capacity. Hence, when the battery is in standby mode (when the remaining battery capacity calculation process is not performed), the microcomputer 17 switches to sleep mode in order to reduce the power consumption of the microcomputer 17. This may suppress discharge current (leakage current) of the battery 12 in standby mode", and further that "when the battery pack 1 is in standby mode, a trace amount of discharge current (leakage current) flows, but the accumulated current (standby current X standby time) **cannot be measured or detected because the microcomputer 17 is in sleep mode**. Therefore, if the battery pack 1 is in standby mode for a long time, there is a problem in that the remaining capacity value stored in the memory 17a by the microcomputer 17 might be relatively greater than the actual remaining capacity value (actual capacity value)". In other words, once placed in the sleep mode, the microcomputer cannot be used because a discharge to power the microcomputer would terminate the standby mode.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious

at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1, 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Camp, Jr. et al.** [hereinafter Camp][6236214].

Camp discloses in figures 1-10 a battery charging/discharging apparatus 10 for determining the remaining capacity of a battery 12, comprising: measuring means for measuring a standby time [step 226 of fig.9] of the battery 12; correction value calculating means for calculating a correction value for the remaining capacity of the battery based on the standby time measured by said measuring means [step 236 of fig.9]; and correcting means for correcting a current remaining capacity value of the battery based on the correction value calculated by said correction value calculating means [step 226 of fig.9] [see also column 6, lines 5-18]. Camp does not disclose specifically measuring means, correction value calculating means, and correcting means.

However, applicant's drawings do not describe measuring means, correction value calculating means, and correcting means, while applicant's specification describes that at steps S37 and S38, the microcomputer 17 calculates the correction value. In other words, the microcomputer performs the functions of the claimed limitations, measuring means, correction value calculating means, and correcting means, which are all part of the microcomputer. Therefore, It would have been obvious to a person having ordinary skill in the art at the time the invention was made to make integral all the parts of a battery charging/discharging apparatus for determining the remaining capacity of the battery, since it has been held that forming in one piece an article which has formerly been formed in two pieces and put together involves only routing skill in the art, in order to reduce the size of the apparatus. **Howard v. Detroit Stove Works**, 150 U.S. 164 (1893).

8. Claims 7 and 8, as best as they can be understood at this time, are rejected under 35 U.S.C. 103(a) as being unpatentable over **van Phuoc et al.** [hereinafter Phuoc] [5633573] in view of **Camp**, as described above.

van Phuoc discloses a cell voltage detector 32 for detecting a cell 10 voltage; a microcomputer 50 for calculating a remaining battery capacity CAP_{rem} based on a detected cell voltage from the cell voltage detector; a memory for storing the remaining battery capacity calculated by the microcomputer; a timer/Watchdogtimer under control of the microcomputer for counting time; wherein when the battery is in a standby mode, the microcomputer sets itself in a sleep mode [see also the abstract; column 3, lines 10-25, lines 25-30; column 6, lines 1-3, 30-45; column 7, lines 66-67; column 8, lines 1-2, lines 44-46]. van Phuoc also discloses CAP_{FC} is a learned value which is self correcting because of reset logic incorporated in a capacity algorithm, but it does not disclose specifically calculating a correction value for the remaining capacity of the battery based on the elapsed standby time read from the timer; reading the remaining battery capacity out from the memory; and correcting an up-to-date remaining capacity value of the battery based on the correction value that is then stored in memory.

Camp discloses calculating a correction value for the remaining capacity of the battery based on the elapsed standby time read from the timer; reading the remaining battery capacity out from the memory; and correcting an up-to-date remaining capacity value of the battery based on the correction value that is then stored in memory. Thus the microprocessor calculates the remaining available power time for the battery corresponding to previously read operational parameters [see also the abstract]. Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify van Phuoc's apparatus and include Camp's teachings in order to provide a user information regarding the remaining available power time for the battery corresponding to previously read operational parameters.

With respect to the method claim 8, as best as it can be understood at this time: the method steps will be met during the normal operation of the apparatus described above.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary.

Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Allowable Subject Matter

10. Claim 2 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

With respect to claim 2: none of the references of record prior to applicant's filing date discloses, teaches, or suggests a battery charging/discharging apparatus according comprising determining means for determining whether the standby time has reached a predetermined time, and wherein correction value calculating means calculate the correction value for the remaining capacity of the battery at a predetermined time interval based on a result of the determining means.

11. As allowable subject matter has been indicated, applicant's reply must either comply with all formal requirements or specifically traverse each requirement not complied with. See 37 CFR 1.111(b) and MPEP § 707.07(a).

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art cited in PTO-892 and not mentioned above disclose related apparatus.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Pia Tibbits whose telephone number is (571) 272-2086. If unavailable, contact the Supervisory Patent Examiner Mike Sherry whose telephone number is (571) 272-2084.

14. Any inquiry of a general nature or relating to the status of this application should be directed to the Technology Center receptionist whose telephone number is (571) 272-2800. Papers related to

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Technology Center 2800 applications only may be submitted to Technology Center 2800 by facsimile transmission. Any transmission not to be considered an official response must be clearly marked "DRAFT". The faxing of such papers must conform to the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The Technology Center Fax Center number is (703) 872-9306.

PFT

May 12, 2004

